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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/382,677	08/25/99	HIROKI	M 0756-2016

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/382,677	Applicant(s) Hiroki Masaaki
	Examiner Uchendu O. Anyaso	Art Unit 2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Aug 25, 1999*

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-29* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-29* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☒ The proposed drawing correction filed on *Aug 25, 1999* is: a) ☐ approved b) ☒ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3-5

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

1. **Claims 1-29** are pending in this action.

Claim Rejections - 35 USC ' 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. **Claims 1 and 5** are rejected under 35 U.S.C. 102(e) as being anticipated by *Eglit* (U.S. Patent 6,147,668).

Regarding **Claim 1**, *Eglit* teaches a method and apparatus for sampling an analog display signal received in a digital display unit (column 1, lines 15-20).

Furthermore, *Eglit* teaches a method wherein the digital display unit (270) generates a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430). This shows *frequency modulating a reference clock signal and a obtaining a modulating clock signal* as claimed by applicant.

Furthermore, *Eglit* teaches a next step of generating a sampled pixel data elements by sampling the analog display data using the sampling clock generated in step 430 (*see* figure 4 at 430 & 440). The analog display data included in the received analog display signal is sampled using the sampling clock in step 440 (column 7, lines 37-39, figure 4 at 430 & 440). Also, *Eglit*

teaches that the modulation step (430) has the general effect that sampling are taken at different points in the samples duration for the same pixel position in successive image frames (column 7, lines 39-42, figure 4 at 430 & 440). This shows *sampling an image signal on the basis of the modulated clock signal* as claimed by applicant.

Also, *Eglit* teaches how to process the sampled data elements which may entail steps such as resizing (column 7, lines 44-46, figure 4 at 450). Furthermore, *Eglit* teaches how the pixel data elements generated by the processing of step 450 can be used for generating display signals on a digital display screen in step 460 (column 7, lines 46-49, figure 4 at 450 & 460). This shows applicant's claim of *supplying the sampled image signal to a corresponding pixel and obtaining an image.*

Regarding **Claim 5**, in further discussion of claim 1, *Eglit* teaches a randomization table which generates a sequence of random numbers that are stored in memory and used to affect the phase delay modification of the intermediate clock signals that are selected for every frame (column 9, lines 32-50, figures 6 at 630 & 640). The sampling points may be different in successive frames (column 9, lines 49-50).

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 2** and **3** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Nakai et al* (U.S. Patent 5,359,342).

Regarding **Claim 2 and 3**, *Eglit* teaches a method and apparatus for sampling an analog display signal received in a digital display unit (column 1, lines 15-20).

Furthermore, *Eglit* teaches a method wherein the digital display unit (270) generates a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430). Also, *Eglit* teaches a digital display unit (270) which includes an analog-to-digital converter (ADC) (310) that samples the analog display data (column 7, lines 57-66, figure 3 at 270 & 310).

However, *Eglit* does not teach a method of performing D/A conversion on the digital image signal on the basis of the reference clock signal and obtaining an improved analog image signal. On the other hand, *Nakai et al* teaches an invention wherein video signals are converted to analog signals by a D/A converter (11c), and then used to drive the liquid crystal display panel (17) (column 4, lines 17-21, figure 1 at 11c).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit* and *Nakai et al* inventions because while *Eglit* teaches a digital display unit (270) which includes an analog-to-digital converter (ADC) (310) that samples the analog display data based on the generation of a sampling clock by modulating the intermediate clock signal, *Nakai et al* teaches how digital image signals are converted to analog signals prior to being inputted to the display. The motivation for combining these inventions would have been to improve the display non-uniformity that may occur when the image signal is inputted to the liquid crystal panel (column 1, lines 9-24).

6. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Oakley* (U.S. Patent 6,281,873).

Regarding **Claim 4**, in further discussion of claim 1, *Eglit* teaches a method wherein the digital display unit (270) generates a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430). However, *Eglit* does not teach a method wherein the modulated clock is obtained by shifting a frequency of the reference clock signal on the basis of a gaussian histogram. On the other hand, *Oakley* teaches a video processing technique related to a vertical scaling process and apparatus wherein each frame of the image consists of a collection of horizontal scan lines which are intensity modulated to form an image by decreasing the frequency of the incoming sampling clock or increasing the frequency of the encoder pixel clock (*see* column 3, lines 1-25; *see also* column 1, lines 5-7). *Oakley* goes on to teach that by changing a gaussian filter coefficients of the kernel, the output can be time shifted by fractions of the clock period (column 4, lines 6-18).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit* and *Oakley's* invention because while *Eglit* teaches generating a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430), *Oakley* teaches changing a gaussian filter coefficients of the kernel so that the output can be time shifted by fractions of the clock period (column 4, lines 6-18). The motivation for combining these inventions would have been

to scale down or shrink video frames in a horizontal or vertical direction (*see* column 1, lines 64-67).

7. **Claims 6** and **7** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Guttner* (U.S. Patent 4,713,688).

Regarding **Claims 6** and **7**, in further discussion of claim 1, *Eglit* does not teach a display device wherein the modulated clock signal is obtained by shifting a frequency of the reference clock signal in the form of a sine wave or triangular wave. On the other hand, *Guttner* teaches offset rasters that facilitate the offset demodulation process (column 11, lines 6-20; *see also* column 8, lines 45-58, figure 10) wherein the picture signal spectrum is periodic in the direction of the horizontal spatial frequencies due to the horizontal sampling in the spatial domain (column 5, lines 51-65, figure 3). Figure 3 shows the clock signal in the form of a sine wave.

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit* and *Guttner* because while *Eglit* teaches generating a sampling clock by modulating the intermediate clock signal, *Guttner* teaches how the shifting of the clock signal would be represented in the form of a sine wave or triangular wave. The motivation for combining these inventions would have been to transmit an image signal with significantly improved horizontal resolution (*see generally* column 1, lines 11-18).

8. **Claims 8-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668).

Regarding **Claims 8-11**, in further discussion of claim 1, *Eglit* teaches a digital display unit (270) (*see* figure 2 at 270). It is well known in the art how such a display would be an active matrix type display device, passive matrix type display device, liquid crystal type display device or an electroluminescence display.

9. **Claims 12-15, 17 and 20-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Martin et al* (U.S. Patent 5,703,621).

Regarding **Claims 12** and **13**, *Eglit* teaches a method wherein the digital display unit (270) generates a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430). This shows *frequency modulating a reference clock signal and a obtaining a modulating clock signal* as claimed by applicant.

However, *Eglit* does not teach the display device having an active matrix circuit. On the other hand, *Martin et al* teaches techniques for presenting all images types such as video images (column 1, lines 45-49) wherein the display includes an active matrix liquid crystal display (column 4, lines 55-57). *Martin et al* also teaches that his invention is capable of performing any necessary scaling, cropping and segmentation of the input image (column 14, lines 9-19, figure 5 at 140 & 142).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit* and *Martin et al* teachings in designing a display device wherein *Eglit* teaches a modulated clock signal obtained by frequency modulating a reference clock signal and *Martin et al* teaches an active matrix display device with scaling, cropping and segmentation capabilities. As such, a

person of ordinary skill in the art would be able to connected the modulated clock signals and the fixed clocked signals to the data and scanning drive circuits respectively as shown in figure 4 of *Martin et al* (*see also* column 5, lines 7-11). The motivation for combining these inventions would have been to present high quality images in the display device (column 4, lines 66-67 *through* column 5, line 1).

Regarding **Claims 14** and **15**, *Eglit* teaches a method wherein the digital display unit (270) generates a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430). This shows *frequency modulating a reference clock signal and a obtaining a modulating clock signal* as claimed by applicant.

However, *Eglit* does not teach the display device having passive matrix circuit. On the other hand, *Martin et al* teaches techniques for presenting all images types such as video images (column 1, lines 45-49) wherein the display includes a monochrome display (claim 9, column 20, lines 54-56). *Martin et al* also teaches that his invention is capable of performing any necessary scaling, cropping and segmentation of the input image (column 14, lines 9-19, figure 5 at 140 & 142).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit* and *Martin et al* teachings in designing a display device wherein *Eglit* teaches a modulated clock signal obtained by frequency modulating a reference clock signal and *Martin et al* teaches a monochrome display device with scaling, cropping and segmentation capabilities. As such, a person of ordinary skill in the art would be able to connected the modulated clock signals and the

fixed clocked signals to the data and scanning drive circuits respectively as shown in figure 4 of *Martin et al* (*see also* column 5, lines 7-11). The motivation for combining these inventions would have been to present high quality images in the display device (column 4, lines 66-67 *through* column 5, line 1).

Regarding **Claim 17**, in further discussion of claim 12, *Eglit* teaches a randomization table which generates a sequence of random numbers that are stored in memory and used to affect the phase delay modification of the intermediate clock signals that are selected for every frame (column 9, lines 32-50, figures 6 at 630 & 640). The sampling points may be different in successive frames (column 9, lines 49-50).

Regarding **Claims 20** and **21**, in further discussion of claim 12, *Martin et al* teaches that his display device could be an LCD, an electroluminescent display or any other type of display (column 18, lines 62-67).

Regarding **Claims 22-29**, in further discussion of claim 12, it is well known in the art that devices such as a mobile telephone, projector, video camera, mobile computer, head mounted display, personal computer, recorder and a digital camera all comprise a display device. Thus, it would have been obvious to a person skilled in the art to utilize such a display device as described in *Eglit and Martin et al* in this various equipment.

10. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Martin et al* (U.S. Patent 5,703,621), as in claim 12 above, and further in view of *Oakley* (U.S. Patent 6,281,873).

Regarding **Claim 16**, in further discussion of claim 12, neither *Eglit* nor *Martin* et al teach a modulated clock obtained by shifting a frequency of the reference clock signal on the basis of a Gaussian histogram. On the other hand, On the other hand, *Oakley* teaches a video processing technique related to a vertical scaling process and apparatus wherein each frame of the image consists of a collection of horizontal scan lines which are intensity modulated to form an image by decreasing the frequency of the incoming sampling clock or increasing the frequency of the encoder pixel clock (*see* column 3, lines 1-25; *see also* column 1, lines 5-7). *Oakley* goes on to teach that by changing a gaussian filter coefficients of the kernel, the output can be time shifted by fractions of the clock period (column 4, lines 6-18).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit, Martin* et al and *Oakley's* inventiona because while *Eglit* teaches generating a sampling clock by modulating the intermediate clock signal by different amounts of phase delay for successive image frames in the display signal (column 7, lines 34-43, figure 4 at 430), *Martin et al* teaches techniques for presenting all images types such as video images (column 1, lines 45-49) wherein the display includes an active matrix liquid crystal display, and *Oakley* teaches changing a gaussian filter coefficients of the kernel so that the output can be time shifted by fractions of the clock period (column 4, lines 6-18). The motivation for combining these inventions would have been to scale down or shrink video frames in a horizontal or vertical direction (*see* column 1, lines 64-67).

11. **Claims 18** and **19** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Eglit* (U.S. Patent 6,147,668) in view of *Martin et al* (U.S. Patent 5,703,621), as in claim 12 above, and further in view of *Guttner* (U.S. Patent 4,713,688).

Regarding **Claims 18** and **19**, in further discussion of claim 12, neither *Eglit* nor *Martin et al* teaches a display device wherein the modulated clock signal is obtained by shifting a frequency of the reference clock signal in the form of a sine wave or triangular wave. On the other hand, *Guttner* teaches offset rasters that facilitate the offset demodulation process (column 11, lines 6-20; *see also* column 8, lines 45-58, figure 10) wherein the picture signal spectrum is periodic in the direction of the horizontal spatial frequencies due to the horizontal sampling in the spatial domain (column 5, lines 51-65, figure 3). Figure 3 shows the clock signal in the form of a sine wave.

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Eglit, Martin et al* and *Guttner* because while *Eglit* teaches generating a sampling clock by modulating the intermediate clock signal, *Martin et al* teaches techniques for presenting all images types such as video images (column 1, lines 45-49) wherein the display includes an active matrix liquid crystal display, and *Guttner* teaches how the shifting of the clock signal would be represented in the form of a sine wave or triangular wave. The motivation for combining these inventions would have been to transmit an image signal with significantly improved horizontal resolution (*see generally* column 1, lines 11-18).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,737,033 to *Musuda et al* for an AGC apparatus concurrently satisfying sufficient impedance matching characteristic and linear AGC characteristic.

U.S. Patent 6,104,863 to *Strolle et al* for a video signal encoded with additional detail information.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Uchendu O. Anyaso** whose telephone number is **(703) 306-5934.** If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steve Saras**, can be reached at **(703) 305-9720.**

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Uchendu O. Anyaso

11/3/2001

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